



SEQUENCE LISTING

<110> Faustus Forschungs Cie. Translational Cancer Research GmbH

<120> Antisense oligonucleotides for treating proliferating cells

<130> PA32470US-01938

<140> US/09/700,906

<141> 2001-02-26

<150> DE 198 22 954.2

<151> 1998-05-22

<160> 5

<170> PatentIn Vers. 2.0

<210> 1

<211> 12493

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (197) .. (9964)

<400> 1

ctaccggggcg gaggtgagcg cggcgccggc tctcctgcg gcggactttg ggtgcgactt 60
gacgagcggg ggttcgacaa gtggccttgc gggccggatc gtcccagtgg aagagttgta 120
aatttgcttc tggccttccc ctacggatta tacctggcct tcccctacgg attataactca 180
acttactgtt tagaaa atg tgg ccc acg aga cgc ctg gtt act atc aaa agg 232
Met Trp Pro Thr Arg Arg Leu Val Thr Ile Lys Arg
1 5 10
agc ggg gtc gac ggt ccc cac ttt ccc ctg agc ctc agc acc tgc ttg 280
Ser Gly Val Asp Gly Pro His Phe Pro Leu Ser Leu Ser Thr Cys Leu
15 20 25
ttt gga agg ggt att gaa tgt gac atc cgt atc cag ctt cct gtt gtg 328
Phe Gly Arg Gly Ile Glu Cys Asp Ile Arg Ile Gln Leu Pro Val Val
30 35 40
tca aaa caa cat tgc aaa gtt gaa atc cat gag cag gag gca ata tta 376
Ser Lys Gln His Cys Lys Val Glu Ile His Glu Gln Glu Ala Ile Leu
45 50 55 60

RECEIVED

NOV 08 2002

TECH CENTER 1600/2900

cat	aat	ttc	agt	tcc	aca	aat	cca	aca	caa	gta	aat	ggg	tct	gtt	att	424
His	Asn	Phe	Ser	Ser	Thr	Asn	Pro	Thr	Gln	Val	Asn	Gly	Ser	Val	Ile	
				65					70					75		
gat	gag	cct	gta	cgg	cta	aaa	cat	gga	gat	gta	ata	act	att	att	gat	472
Asp	Glu	Pro	Val	Arg	Leu	Lys	His	Gly	Asp	Val	Ile	Thr	Ile	Ile	Asp	
			80					85					90			
cgt	tcc	ttc	agg	tat	gaa	aat	gaa	agt	ctt	cag	aat	gga	agg	aag	tca	520
Arg	Ser	Phe	Arg	Tyr	Glu	Asn	Glu	Ser	Leu	Gln	Asn	Gly	Arg	Lys	Ser	
		95					100					105				
act	gaa	ttt	cca	aga	aaa	ata	cgt	gaa	cag	gag	cca	gca	cgt	cgt	gtc	568
Thr	Glu	Phe	Pro	Arg	Lys	Ile	Arg	Glu	Gln	Glu	Pro	Ala	Arg	Arg	Val	
	110					115					120					
tca	aga	tct	agc	ttc	tct	tct	gac	cct	gat	gag	aaa	gct	caa	gat	tcc	616
Ser	Arg	Ser	Ser	Phe	Ser	Ser	Asp	Pro	Asp	Glu	Lys	Ala	Gln	Asp	Ser	
125					130					135					140	
aag	gcc	tat	tca	aaa	atc	act	gaa	gga	aaa	gtt	tca	gga	aat	cct	cag	664
Lys	Ala	Tyr	Ser	Lys	Ile	Thr	Glu	Gly	Lys	Val	Ser	Gly	Asn	Pro	Gln	
				145				150						155		
gta	cat	atc	aag	aat	gtc	aaa	gaa	gac	agt	acc	gca	gat	gac	tca	aaa	712
Val	His	Ile	Lys	Asn	Val	Lys	Glu	Asp	Ser	Thr	Ala	Asp	Asp	Ser	Lys	
			160					165					170			
gac	agt	gtt	gct	cag	gga	aca	act	aat	gtt	cat	tcc	tca	gaa	cat	gct	760
Asp	Ser	Val	Ala	Gln	Gly	Thr	Thr	Asn	Val	His	Ser	Ser	Glu	His	Ala	
		175					180					185				
gga	cgt	aat	ggc	aga	aat	gca	gct	gat	ccc	att	tct	ggg	gat	ttt	aaa	808
Gly	Arg	Asn	Gly	Arg	Asn	Ala	Ala	Asp	Pro	Ile	Ser	Gly	Asp	Phe	Lys	
	190					195					200					
gaa	att	tcc	agc	gtt	aaa	tta	gtg	agc	cgt	tat	gga	gaa	ttg	aag	tct	856
Glu	Ile	Ser	Ser	Val	Lys	Leu	Val	Ser	Arg	Tyr	Gly	Glu	Leu	Lys	Ser	
205					210					215					220	
gtt	ccc	act	aca	caa	tgt	ctt	gac	aat	agc	aaa	aaa	aat	gaa	tct	ccc	904
Val	Pro	Thr	Thr	Gln	Cys	Leu	Asp	Asn	Ser	Lys	Lys	Asn	Glu	Ser	Pro	
				225				230						235		
ttt	tgg	aag	ctt	tat	gag	tca	gtg	aag	aaa	gag	ttg	gat	gta	aaa	tca	952
Phe	Trp	Lys	Leu	Tyr	Glu	Ser	Val	Lys	Lys	Glu	Leu	Asp	Val	Lys	Ser	
			240					245					250			
caa	aaa	gaa	aat	gtc	cta	cag	tat	tgt	aga	aaa	tct	gga	tta	caa	act	1000
Gln	Lys	Glu	Asn	Val	Leu	Gln	Tyr	Cys	Arg	Lys	Ser	Gly	Leu	Gln	Thr	
		255					260					265				

gat	tac	gca	aca	gag	aaa	gaa	agt	gct	gat	ggt	tta	cag	ggg	gag	acc	1048
Asp	Tyr	Ala	Thr	Glu	Lys	Glu	Ser	Ala	Asp	Gly	Leu	Gln	Gly	Glu	Thr	
	270					275					280					
caa	ctg	ttg	gtc	tcg	cgt	aag	tca	aga	cca	aaa	tct	ggt	ggg	agc	ggc	1096
Gln	Leu	Leu	Val	Ser	Arg	Lys	Ser	Arg	Pro	Lys	Ser	Gly	Gly	Ser	Gly	
	285				290					295					300	
cac	gct	gtg	gca	gag	cct	gct	tca	cct	gaa	caa	gag	ctt	gac	cag	aac	1144
His	Ala	Val	Ala	Glu	Pro	Ala	Ser	Pro	Glu	Gln	Glu	Leu	Asp	Gln	Asn	
				305					310					315		
aag	ggg	aag	gga	aga	gac	gtg	gag	tct	gtt	cag	act	ccc	agc	aag	gct	1192
Lys	Gly	Lys	Gly	Arg	Asp	Val	Glu	Ser	Val	Gln	Thr	Pro	Ser	Lys	Ala	
			320					325					330			
gtg	ggc	gcc	agc	ttt	cct	ctc	tat	gag	ccg	gct	aaa	atg	aag	acc	cct	1240
Val	Gly	Ala	Ser	Phe	Pro	Leu	Tyr	Glu	Pro	Ala	Lys	Met	Lys	Thr	Pro	
		335					340					345				
gta	caa	tat	tca	cag	caa	caa	aat	tct	cca	caa	aaa	cat	aag	aac	aaa	1288
Val	Gln	Tyr	Ser	Gln	Gln	Gln	Asn	Ser	Pro	Gln	Lys	His	Lys	Asn	Lys	
	350					355					360					
gac	ctg	tat	act	act	ggt	aga	aga	gaa	tct	gtg	aat	ctg	ggt	aaa	agt	1336
Asp	Leu	Tyr	Thr	Thr	Gly	Arg	Arg	Glu	Ser	Val	Asn	Leu	Gly	Lys	Ser	
	365				370					375					380	
gaa	ggc	ttc	aag	gct	ggt	gat	aaa	act	ctt	act	ccc	agg	aag	ctt	tca	1384
Glu	Gly	Phe	Lys	Ala	Gly	Asp	Lys	Thr	Leu	Thr	Pro	Arg	Lys	Leu	Ser	
				385					390					395		
act	aga	aat	cga	aca	cca	gct	aaa	gtt	gaa	gat	gca	gct	gac	tct	gcc	1432
Thr	Arg	Asn	Arg	Thr	Pro	Ala	Lys	Val	Glu	Asp	Ala	Ala	Asp	Ser	Ala	
			400					405					410			
act	aag	cca	gaa	aat	ctc	tct	tcc	aaa	acc	aga	gga	agt	att	cct	aca	1480
Thr	Lys	Pro	Glu	Asn	Leu	Ser	Ser	Lys	Thr	Arg	Gly	Ser	Ile	Pro	Thr	
		415					420					425				
gat	gtg	gaa	gtt	ctg	cct	acg	gaa	act	gaa	att	cac	aat	gag	cca	ttt	1528
Asp	Val	Glu	Val	Leu	Pro	Thr	Glu	Thr	Glu	Ile	His	Asn	Glu	Pro	Phe	
	430					435					440					
tta	act	ctg	tgg	ctc	act	caa	gtt	gag	agg	aag	atc	caa	aag	gat	tcc	1576
Leu	Thr	Leu	Trp	Leu	Thr	Gln	Val	Glu	Arg	Lys	Ile	Gln	Lys	Asp	Ser	
	445				450					455					460	
ctc	agc	aag	cct	gag	aaa	ttg	ggc	act	aca	gct	gga	cag	atg	tgc	tct	1624
Leu	Ser	Lys	Pro	Glu	Lys	Leu	Gly	Thr	Thr	Ala	Gly	Gln	Met	Cys	Ser	

465								470					475				
ggg	tta	cct	ggt	ctt	agt	tca	gtt	gat	atc	aac	aac	ttt	ggt	gat	tcc		1672
Gly	Leu	Pro	Gly	Leu	Ser	Ser	Val	Asp	Ile	Asn	Asn	Phe	Gly	Asp	Ser		
			480					485					490				
att	aat	gag	agt	gag	gga	ata	cct	ttg	aaa	aga	agg	cgt	gtg	tcc	ttt		1720
Ile	Asn	Glu	Ser	Glu	Gly	Ile	Pro	Leu	Lys	Arg	Arg	Arg	Val	Ser	Phe		
		495					500					505					
ggt	ggg	cac	cta	aga	cct	gaa	cta	ttt	gat	gaa	aac	ttg	cct	cct	aat		1768
Gly	Gly	His	Leu	Arg	Pro	Glu	Leu	Phe	Asp	Glu	Asn	Leu	Pro	Pro	Asn		
	510					515					520						
acg	cct	ctc	aaa	agg	gga	gaa	gcc	cca	acc	aaa	aga	aag	tct	ctg	gta		1816
Thr	Pro	Leu	Lys	Arg	Gly	Glu	Ala	Pro	Thr	Lys	Arg	Lys	Ser	Leu	Val		
525					530					535					540		
atg	cac	act	cca	cct	gtc	ctg	aag	aaa	atc	atc	aag	gaa	cag	cct	caa		1864
Met	His	Thr	Pro	Pro	Val	Leu	Lys	Lys	Ile	Ile	Lys	Glu	Gln	Pro	Gln		
				545					550					555			
cca	tca	gga	aaa	caa	gag	tca	ggt	tca	gaa	atc	cat	gtg	gaa	gtg	aag		1912
Pro	Ser	Gly	Lys	Gln	Glu	Ser	Gly	Ser	Glu	Ile	His	Val	Glu	Val	Lys		
			560					565				570					
gca	caa	agc	ttg	gtt	ata	agc	cct	cca	gct	cct	agt	cct	agg	aaa	act		1960
Ala	Gln	Ser	Leu	Val	Ile	Ser	Pro	Pro	Ala	Pro	Ser	Pro	Arg	Lys	Thr		
		575					580					585					
cca	gtt	gcc	agt	gat	caa	cgc	cgt	agg	tcc	tgc	aaa	aca	gcc	cct	gct		2008
Pro	Val	Ala	Ser	Asp	Gln	Arg	Arg	Arg	Ser	Cys	Lys	Thr	Ala	Pro	Ala		
	590					595					600						
tcc	agc	agc	aaa	tct	cag	aca	gag	gtt	cct	aag	aga	gga	gga	gaa	aga		2056
Ser	Ser	Ser	Lys	Ser	Gln	Thr	Glu	Val	Pro	Lys	Arg	Gly	Gly	Glu	Arg		
605					610					615					620		
gtg	gca	acc	tgc	ctt	caa	aag	aga	gtg	tct	atc	agc	cga	agt	caa	cat		2104
Val	Ala	Thr	Cys	Leu	Gln	Lys	Arg	Val	Ser	Ile	Ser	Arg	Ser	Gln	His		
				625					630					635			
gat	att	tta	cag	atg	ata	tgt	tcc	aaa	aga	aga	agt	ggt	gct	tcg	gaa		2152
Asp	Ile	Leu	Gln	Met	Ile	Cys	Ser	Lys	Arg	Arg	Ser	Gly	Ala	Ser	Glu		
			640					645					650				
gca	aat	ctg	att	gtt	gca	aaa	tca	tgg	gca	gat	gta	gta	aaa	ctt	ggt		2200
Ala	Asn	Leu	Ile	Val	Ala	Lys	Ser	Trp	Ala	Asp	Val	Val	Lys	Leu	Gly		
		655					660					665					
gca	aaa	caa	aca	caa	act	aaa	gtc	ata	aaa	cat	ggt	cct	caa	agg	tca		2248

Ala	Lys	Gln	Thr	Gln	Thr	Lys	Val	Ile	Lys	His	Gly	Pro	Gln	Arg	Ser	
670						675					680					
atg	aac	aaa	agg	caa	aga	aga	cct	gct	act	cca	aag	aag	cct	gtg	ggc	2296
Met	Asn	Lys	Arg	Gln	Arg	Arg	Pro	Ala	Thr	Pro	Lys	Lys	Pro	Val	Gly	
685					690					695					700	
gaa	gtt	cac	agt	caa	ttt	agt	aca	ggc	cac	gca	aac	tct	cct	tgt	acc	2344
Glu	Val	His	Ser	Gln	Phe	Ser	Thr	Gly	His	Ala	Asn	Ser	Pro	Cys	Thr	
				705				710						715		
ata	ata	ata	ggg	aaa	gct	cat	act	gaa	aaa	gta	cat	gtg	cct	gct	cga	2392
Ile	Ile	Ile	Gly	Lys	Ala	His	Thr	Glu	Lys	Val	His	Val	Pro	Ala	Arg	
			720					725					730			
ccc	tac	aga	gtg	ctc	aac	aac	ttc	att	tcc	aac	caa	aaa	atg	gac	ttt	2440
Pro	Tyr	Arg	Val	Leu	Asn	Asn	Phe	Ile	Ser	Asn	Gln	Lys	Met	Asp	Phe	
		735					740					745				
aag	gaa	gat	ctt	tca	gga	ata	gct	gaa	atg	ttc	aag	acc	cca	gtg	aag	2488
Lys	Glu	Asp	Leu	Ser	Gly	Ile	Ala	Glu	Met	Phe	Lys	Thr	Pro	Val	Lys	
	750				755						760					
gag	caa	ccg	cag	ttg	aca	agc	aca	tgt	cac	atc	gct	att	tca	aat	tca	2536
Glu	Gln	Pro	Gln	Leu	Thr	Ser	Thr	Cys	His	Ile	Ala	Ile	Ser	Asn	Ser	
765				770						775					780	
gag	aat	ttg	ctt	gga	aaa	cag	ttt	caa	gga	act	gat	tca	gga	gaa	gaa	2584
Glu	Asn	Leu	Leu	Gly	Lys	Gln	Phe	Gln	Gly	Thr	Asp	Ser	Gly	Glu	Glu	
				785				790					795			
cct	ctg	ctc	ccc	acc	tca	gag	agt	ttt	gga	gga	aat	gtg	ttc	ttc	agt	2632
Pro	Leu	Leu	Pro	Thr	Ser	Glu	Ser	Phe	Gly	Gly	Asn	Val	Phe	Phe	Ser	
			800					805					810			
gca	cag	aat	gca	gca	aaa	cag	cca	tct	gat	aaa	tgc	tct	gca	agc	cct	2680
Ala	Gln	Asn	Ala	Ala	Lys	Gln	Pro	Ser	Asp	Lys	Cys	Ser	Ala	Ser	Pro	
		815				820						825				
ccc	tta	aga	cgg	cag	tgt	att	aga	gaa	aat	gga	aac	gta	gca	aaa	acg	2728
Pro	Leu	Arg	Arg	Gln	Cys	Ile	Arg	Glu	Asn	Gly	Asn	Val	Ala	Lys	Thr	
	830				835						840					
ccc	agg	aac	acc	tac	aaa	atg	act	tct	ctg	gag	aca	aaa	act	tca	gat	2776
Pro	Arg	Asn	Thr	Tyr	Lys	Met	Thr	Ser	Leu	Glu	Thr	Lys	Thr	Ser	Asp	
845					850					855					860	
act	gag	aca	gag	cct	tca	aaa	aca	gta	tcc	act	gta	aac	agg	tca	gga	2824
Thr	Glu	Thr	Glu	Pro	Ser	Lys	Thr	Val	Ser	Thr	Val	Asn	Arg	Ser	Gly	
				865				870						875		

agg tct aca gag ttc agg aat ata cag aag cta cct gtg gaa agt aag	2872
Arg Ser Thr Glu Phe Arg Asn Ile Gln Lys Leu Pro Val Glu Ser Lys	
880 885 890	
agt gaa gaa aca aat aca gaa att gtt gag tgc atc cta aaa aga ggt	2920
Ser Glu Glu Thr Asn Thr Glu Ile Val Glu Cys Ile Leu Lys Arg Gly	
895 900 905	
cag aag gca aca cta cta caa caa agg aga gaa gga gag atg aag gaa	2968
Gln Lys Ala Thr Leu Leu Gln Gln Arg Arg Glu Gly Glu Met Lys Glu	
910 915 920	
ata gaa aga cct ttt gag aca tat aag gaa aat att gaa tta aaa gaa	3016
Ile Glu Arg Pro Phe Glu Thr Tyr Lys Glu Asn Ile Glu Leu Lys Glu	
925 930 935 940	
aac gat gaa aag atg aaa gca atg aag aga tca aga act tgg ggg cag	3064
Asn Asp Glu Lys Met Lys Ala Met Lys Arg Ser Arg Thr Trp Gly Gln	
945 950 955	
aaa tgt gca cca atg tct gac ctg aca gac ctc aag agc ttg cct gat	3112
Lys Cys Ala Pro Met Ser Asp Leu Thr Asp Leu Lys Ser Leu Pro Asp	
960 965 970	
aca gaa ctc atg aaa gac acg gca cgt ggc cag aat ctc ctc caa acc	3160
Thr Glu Leu Met Lys Asp Thr Ala Arg Gly Gln Asn Leu Leu Gln Thr	
975 980 985	
caa gat cat gcc aag gca cca aag agt gag aaa ggc aaa atc act aaa	3208
Gln Asp His Ala Lys Ala Pro Lys Ser Glu Lys Gly Lys Ile Thr Lys	
990 995 1000	
atg ccc tgc cag tca tta caa cca gaa cca ata aac acc cca aca cac	3256
Met Pro Cys Gln Ser Leu Gln Pro Glu Pro Ile Asn Thr Pro Thr His	
1005 1010 1015 1020	
aca aaa caa cag ttg aag gca tcc ctg ggg aaa gta ggt gtg aaa gaa	3304
Thr Lys Gln Gln Leu Lys Ala Ser Leu Gly Lys Val Gly Val Lys Glu	
1025 1030 1035	
gag ctc cta gca gtc ggc aag ttc aca cgg acg tca ggg gag acc acg	3352
Glu Leu Leu Ala Val Gly Lys Phe Thr Arg Thr Ser Gly Glu Thr Thr	
1040 1045 1050	
cac acg cac aga gag cca gca gga gat ggc aag agc atc aga acg ttt	3400
His Thr His Arg Glu Pro Ala Gly Asp Gly Lys Ser Ile Arg Thr Phe	
1055 1060 1065	
aag gag tct cca aag cag atc ctg gac cca gca gcc cgt gta act gga	3448
Lys Glu Ser Pro Lys Gln Ile Leu Asp Pro Ala Ala Arg Val Thr Gly	
1070 1075 1080	

atg aag aag tgg cca aga acg cct aag gaa gag gcc cag tca cta gaa	3496
Met Lys Lys Trp Pro Arg Thr Pro Lys Glu Glu Ala Gln Ser Leu Glu	
1085 1090 1095 1100	
gac ctg gct ggc ttc aaa gag ctc ttc cag aca cca ggt ccc tct gag	3544
Asp Leu Ala Gly Phe Lys Glu Leu Phe Gln Thr Pro Gly Pro Ser Glu	
1105 1110 1115	
gaa tca atg act gat gag aaa act acc aaa ata gcc tgc aaa tct cca	3592
Glu Ser Met Thr Asp Glu Lys Thr Thr Lys Ile Ala Cys Lys Ser Pro	
1120 1125 1130	
cca cca gaa tca gtg gac act cca aca agc aca aag caa tgg cct aag	3640
Pro Pro Glu Ser Val Asp Thr Pro Thr Ser Thr Lys Gln Trp Pro Lys	
1135 1140 1145	
aga agt ctc agg aaa gca gat gta gag gaa gaa ttc tta gca ctc agg	3688
Arg Ser Leu Arg Lys Ala Asp Val Glu Glu Glu Phe Leu Ala Leu Arg	
1150 1155 1160	
aaa cta aca cca tca gca ggg aaa gcc atg ctt acg ccc aaa cca gca	3736
Lys Leu Thr Pro Ser Ala Gly Lys Ala Met Leu Thr Pro Lys Pro Ala	
1165 1170 1175 1180	
gga ggt gat gag aaa gac att aaa gca ttt atg gga act cca gtg cag	3784
Gly Gly Asp Glu Lys Asp Ile Lys Ala Phe Met Gly Thr Pro Val Gln	
1185 1190 1195	
aaa ctg gac ctg gca gga act tta cct ggc agc aaa aga cag cta cag	3832
Lys Leu Asp Leu Ala Gly Thr Leu Pro Gly Ser Lys Arg Gln Leu Gln	
1200 1205 1210	
act cct aag gaa aag gcc cag gct cta gaa gac ctg gct ggc ttt aaa	3880
Thr Pro Lys Glu Lys Ala Gln Ala Leu Glu Asp Leu Ala Gly Phe Lys	
1215 1220 1225	
gag ctc ttc cag act cct ggt cac acc gag gaa tta gtg gct gct ggt	3928
Glu Leu Phe Gln Thr Pro Gly His Thr Glu Glu Leu Val Ala Ala Gly	
1230 1235 1240	
aaa acc act aaa ata ccc tgc gac tct cca cag tca gac cca gtg gac	3976
Lys Thr Thr Lys Ile Pro Cys Asp Ser Pro Gln Ser Asp Pro Val Asp	
1245 1250 1255 1260	
acc cca aca agc aca aag caa cga ccc aag aga agt atc agg aaa gca	4024
Thr Pro Thr Ser Thr Lys Gln Arg Pro Lys Arg Ser Ile Arg Lys Ala	
1265 1270 1275	
gat gta gag gga gaa ctc tta gcg tgc agg aat cta atg cca tca gca	4072
Asp Val Glu Gly Glu Leu Leu Ala Cys Arg Asn Leu Met Pro Ser Ala	

1280	1285	1290	
ggc aaa gcc atg cac acg cct aaa cca tca gta ggt gaa gag aaa gac			4120
Gly Lys Ala Met His Thr Pro Lys Pro Ser Val Gly Glu Glu Lys Asp			
1295	1300	1305	
atc atc ata ttt gtg gga act cca gtg cag aaa ctg gac ctg aca gag			4168
Ile Ile Ile Phe Val Gly Thr Pro Val Gln Lys Leu Asp Leu Thr Glu			
1310	1315	1320	
aac tta acc ggc agc aag aga cgg cca caa act cct aag gaa gag gcc			4216
Asn Leu Thr Gly Ser Lys Arg Arg Pro Gln Thr Pro Lys Glu Glu Ala			
1325	1330	1335	1340
cag gct ctg gaa gac ctg act ggc ttt aaa gag ctc ttc cag acc cct			4264
Gln Ala Leu Glu Asp Leu Thr Gly Phe Lys Glu Leu Phe Gln Thr Pro			
1345	1350	1355	
ggc cat act gaa gaa gca gtg gct gct ggc aaa act act aaa atg ccc			4312
Gly His Thr Glu Glu Ala Val Ala Ala Gly Lys Thr Thr Lys Met Pro			
1360	1365	1370	
tgc gaa tct tct cca cca gaa tca gca gac acc cca aca agc aca aga			4360
Cys Glu Ser Ser Pro Pro Glu Ser Ala Asp Thr Pro Thr Ser Thr Arg			
1375	1380	1385	
agg cag ccc aag aca cct ttg gag aaa agg gac gta cag aag gag ctc			4408
Arg Gln Pro Lys Thr Pro Leu Glu Lys Arg Asp Val Gln Lys Glu Leu			
1390	1395	1400	
tca gcc ctg aag aag ctc aca cag aca tca ggg gaa acc aca cac aca			4456
Ser Ala Leu Lys Lys Leu Thr Gln Thr Ser Gly Glu Thr Thr His Thr			
1405	1410	1415	1420
gat aaa gta cca gga ggt gag gat aaa agc atc aac gcg ttt agg gaa			4504
Asp Lys Val Pro Gly Gly Glu Asp Lys Ser Ile Asn Ala Phe Arg Glu			
1425	1430	1435	
act gca aaa cag aaa ctg gac cca gca gca agt gta act ggt agc aag			4552
Thr Ala Lys Gln Lys Leu Asp Pro Ala Ala Ser Val Thr Gly Ser Lys			
1440	1445	1450	
agg cac cca aaa act aag gaa aag gcc caa ccc cta gaa gac ctg gct			4600
Arg His Pro Lys Thr Lys Glu Lys Ala Gln Pro Leu Glu Asp Leu Ala			
1455	1460	1465	
ggc tgg aaa gag ctc ttc cag aca cca gta tgc act gac aag ccc acg			4648
Gly Trp Lys Glu Leu Phe Gln Thr Pro Val Cys Thr Asp Lys Pro Thr			
1470	1475	1480	
act cac gag aaa act acc aaa ata gcc tgc aga tca caa cca gac cca			4696

Thr His Glu Lys Thr Thr Lys Ile Ala Cys Arg Ser Gln Pro Asp Pro	
1485	1490 1495 1500
gtg gac aca cca aca agc tcc aag cca cag tcc aag aga agt ctc agg	4744
Val Asp Thr Pro Thr Ser Ser Lys Pro Gln Ser Lys Arg Ser Leu Arg	
	1505 1510 1515
aaa gtg gac gta gaa gaa gaa ttc ttc gca ctc agg aaa cga aca cca	4792
Lys Val Asp Val Glu Glu Glu Phe Phe Ala Leu Arg Lys Arg Thr Pro	
	1520 1525 1530
tca gca ggc aaa gcc atg cac aca ccc aaa cca gca gta agt ggt gag	4840
Ser Ala Gly Lys Ala Met His Thr Pro Lys Pro Ala Val Ser Gly Glu	
	1535 1540 1545
aaa aac atc tac gca ttt atg gga act cca gtg cag aaa ctg gac ctg	4888
Lys Asn Ile Tyr Ala Phe Met Gly Thr Pro Val Gln Lys Leu Asp Leu	
	1550 1555 1560
aca gag aac tta act ggc agc aag aga cgg cta caa act cct aag gaa	4936
Thr Glu Asn Leu Thr Gly Ser Lys Arg Arg Leu Gln Thr Pro Lys Glu	
	1565 1570 1575 1580
aag gcc cag gct cta gaa gac ctg gct ggc ttt aaa gag ctc ttc cag	4984
Lys Ala Gln Ala Leu Glu Asp Leu Ala Gly Phe Lys Glu Leu Phe Gln	
	1585 1590 1595
aca cga ggt cac act gag gaa tca atg act aac gat aaa act gcc aaa	5032
Thr Arg Gly His Thr Glu Glu Ser Met Thr Asn Asp Lys Thr Ala Lys	
	1600 1605 1610
gta gcc tgc aaa tct tca caa cca gac cta gac aaa aac cca gca agc	5080
Val Ala Cys Lys Ser Ser Gln Pro Asp Leu Asp Lys Asn Pro Ala Ser	
	1615 1620 1625
tcc aag cga cgg ctc aag aca tcc ctg ggg aaa gtg ggc gtg aaa gaa	5128
Ser Lys Arg Arg Leu Lys Thr Ser Leu Gly Lys Val Gly Val Lys Glu	
	1630 1635 1640
gag ctc cta gca gtt ggc aag ctc aca cag aca tca gga gag act aca	5176
Glu Leu Leu Ala Val Gly Lys Leu Thr Gln Thr Ser Gly Glu Thr Thr	
	1645 1650 1655 1660
cac aca cac aca gag cca aca gga gat ggt aag agc atg aaa gca ttt	5224
His Thr His Thr Glu Pro Thr Gly Asp Gly Lys Ser Met Lys Ala Phe	
	1665 1670 1675
atg gag tct cca aag cag atc tta gac tca gca gca agt cta act ggc	5272
Met Glu Ser Pro Lys Gln Ile Leu Asp Ser Ala Ala Ser Leu Thr Gly	
	1680 1685 1690

agc aag agg cag ctg aga act cct aag gga aag tct gaa gtc cct gaa	5320
Ser Lys Arg Gln Leu Arg Thr Pro Lys Gly Lys Ser Glu Val Pro Glu	
1695 1700 1705	
gac ctg gcc ggc ttc atc gag ctc ttc cag aca cca agt cac act aag	5368
Asp Leu Ala Gly Phe Ile Glu Leu Phe Gln Thr Pro Ser His Thr Lys	
1710 1715 1720	
gaa tca atg act aat gaa aaa act acc aaa gta tcc tac aga gct tca	5416
Glu Ser Met Thr Asn Glu Lys Thr Thr Lys Val Ser Tyr Arg Ala Ser	
1725 1730 1735 1740	
cag cca gac cta gtg gac acc cca aca agc tcc aag cca cag ccc aag	5464
Gln Pro Asp Leu Val Asp Thr Pro Thr Ser Ser Lys Pro Gln Pro Lys	
1745 1750 1755	
aga agt ctc agg aaa gca gac act gaa gaa gaa ttt tta gca ttt agg	5512
Arg Ser Leu Arg Lys Ala Asp Thr Glu Glu Glu Phe Leu Ala Phe Arg	
1760 1765 1770	
aaa caa acg cca tca gca ggc aaa gcc atg cac aca ccc aaa cca gca	5560
Lys Gln Thr Pro Ser Ala Gly Lys Ala Met His Thr Pro Lys Pro Ala	
1775 1780 1785	
gta ggt gaa gag aaa gac atc aac acg ttt ttg gga act cca gtg cag	5608
Val Gly Glu Glu Lys Asp Ile Asn Thr Phe Leu Gly Thr Pro Val Gln	
1790 1795 1800	
aaa ctg gac cag cca gga aat tta cct ggc agc aat aga cgg cta caa	5656
Lys Leu Asp Gln Pro Gly Asn Leu Pro Gly Ser Asn Arg Arg Leu Gln	
1805 1810 1815 1820	
act cgt aag gaa aag gcc cag gct cta gaa gaa ctg act ggc ttc aga	5704
Thr Arg Lys Glu Lys Ala Gln Ala Leu Glu Glu Leu Thr Gly Phe Arg	
1825 1830 1835	
gag ctt ttc cag aca cca tgc act gat aac ccc aca gct gat gag aaa	5752
Glu Leu Phe Gln Thr Pro Cys Thr Asp Asn Pro Thr Ala Asp Glu Lys	
1840 1845 1850	
act acc aaa aaa ata ctc tgc aaa tct ccg caa tca gac cca gcg gac	5800
Thr Thr Lys Lys Ile Leu Cys Lys Ser Pro Gln Ser Asp Pro Ala Asp	
1855 1860 1865	
acc cca aca aac aca aag caa cgg ccc aag aga agc ctc aag aaa gca	5848
Thr Pro Thr Asn Thr Lys Gln Arg Pro Lys Arg Ser Leu Lys Lys Ala	
1870 1875 1880	
gac gta gag gaa gaa ttt tta gca ttc agg aaa cta aca cca tca gca	5896
Asp Val Glu Glu Glu Phe Leu Ala Phe Arg Lys Leu Thr Pro Ser Ala	
1885 1890 1895 1900	

ggc aaa gcc atg cac acg cct aaa gca gca gta ggt gaa gag aaa gac	5944
Gly Lys Ala Met His Thr Pro Lys Ala Ala Val Gly Glu Glu Lys Asp	
1905 1910 1915	
atc aac aca ttt gtg ggg act cca gtg gag aaa ctg gac ctg cta gga	5992
Ile Asn Thr Phe Val Gly Thr Pro Val Glu Lys Leu Asp Leu Leu Gly	
1920 1925 1930	
aat tta cct ggc agc aag aga cgg cca caa act cct aaa gaa aag gcc	6040
Asn Leu Pro Gly Ser Lys Arg Arg Pro Gln Thr Pro Lys Glu Lys Ala	
1935 1940 1945	
aag gct cta gaa gat ctg gct ggc ttc aaa gag ctc ttc cag aca cca	6088
Lys Ala Leu Glu Asp Leu Ala Gly Phe Lys Glu Leu Phe Gln Thr Pro	
1950 1955 1960	
ggt cac act gag gaa tca atg acc gat gac aaa atc aca gaa gta tcc	6136
Gly His Thr Glu Glu Ser Met Thr Asp Asp Lys Ile Thr Glu Val Ser	
1965 1970 1975 1980	
tgc aaa tct cca caa cca gac cca gtc aaa acc cca aca agc tcc aag	6184
Cys Lys Ser Pro Gln Pro Asp Pro Val Lys Thr Pro Thr Ser Ser Lys	
1985 1990 1995	
caa cga ctc aag ata tcc ttg ggg aaa gta ggt gtg aaa gaa gag gtc	6232
Gln Arg Leu Lys Ile Ser Leu Gly Lys Val Gly Val Lys Glu Glu Val	
2000 2005 2010	
cta cca gtc ggc aag ctc aca cag acg tca ggg aag acc aca cag aca	6280
Leu Pro Val Gly Lys Leu Thr Gln Thr Ser Gly Lys Thr Thr Gln Thr	
2015 2020 2025	
cac aga gag aca gca gga gat gga aag agc atc aaa gcg ttt aag gaa	6328
His Arg Glu Thr Ala Gly Asp Gly Lys Ser Ile Lys Ala Phe Lys Glu	
2030 2035 2040	
tct gca aag cag atg ctg gac cca gca aac tat gga act ggg atg gag	6376
Ser Ala Lys Gln Met Leu Asp Pro Ala Asn Tyr Gly Thr Gly Met Glu	
2045 2050 2055 2060	
agg tgg cca aga aca cct aag gaa gag gcc caa tca cta gaa gac ctg	6424
Arg Trp Pro Arg Thr Pro Lys Glu Glu Ala Gln Ser Leu Glu Asp Leu	
2065 2070 2075	
gcc ggc ttc aaa gag ctc ttc cag aca cca gac cac act gag gaa tca	6472
Ala Gly Phe Lys Glu Leu Phe Gln Thr Pro Asp His Thr Glu Glu Ser	
2080 2085 2090	
aca act gat gac aaa act acc aaa ata gcc tgc aaa tct cca cca cca	6520
Thr Thr Asp Asp Lys Thr Thr Lys Ile Ala Cys Lys Ser Pro Pro Pro	

2095	2100	2105	
gaa tca atg gac act cca aca agc aca agg agg cgg ccc aaa aca cct Glu Ser Met Asp Thr Pro Thr Ser Thr Arg Arg Arg Pro Lys Thr Pro 2110 2115 2120			6568
ttg ggg aaa agg gat ata gtg gaa gag ctc tca gcc ctg aag cag ctc Leu Gly Lys Arg Asp Ile Val Glu Glu Leu Ser Ala Leu Lys Gln Leu 2125 2130 2135 2140			6616
aca cag acc aca cac aca gac aaa gta cca gga gat gag gat aaa ggc Thr Gln Thr Thr His Thr Asp Lys Val Pro Gly Asp Glu Asp Lys Gly 2145 2150 2155			6664
atc aac gtg ttc agg gaa act gca aaa cag aaa ctg gac cca gca gca Ile Asn Val Phe Arg Glu Thr Ala Lys Gln Lys Leu Asp Pro Ala Ala 2160 2165 2170			6712
agt gta act ggt agc aag agg cag cca aga act cct aag gga aaa gcc Ser Val Thr Gly Ser Lys Arg Gln Pro Arg Thr Pro Lys Gly Lys Ala 2175 2180 2185			6760
caa ccc cta gaa gac ttg gct ggc ttg aaa gag ctc ttc cag aca cca Gln Pro Leu Glu Asp Leu Ala Gly Leu Lys Glu Leu Phe Gln Thr Pro 2190 2195 2200			6808
gta tgc act gac aag ccc acg act cac gag aaa act acc aaa ata gcc Val Cys Thr Asp Lys Pro Thr Thr His Glu Lys Thr Thr Lys Ile Ala 2205 2210 2215 2220			6856
tgc aga tct cca caa cca gac cca gtg ggt acc cca aca atc ttc aag Cys Arg Ser Pro Gln Pro Asp Pro Val Gly Thr Pro Thr Ile Phe Lys 2225 2230 2235			6904
cca cag tcc aag aga agt ctc agg aaa gca gac gta gag gaa gaa tcc Pro Gln Ser Lys Arg Ser Leu Arg Lys Ala Asp Val Glu Glu Glu Ser 2240 2245 2250			6952
tta gca ctc agg aaa cga aca cca tca gta ggg aaa gct atg gac aca Leu Ala Leu Arg Lys Arg Thr Pro Ser Val Gly Lys Ala Met Asp Thr 2255 2260 2265			7000
ccc aaa cca gca gga ggt gat gag aaa gac atg aaa gca ttt atg gga Pro Lys Pro Ala Gly Gly Asp Glu Lys Asp Met Lys Ala Phe Met Gly 2270 2275 2280			7048
act cca gtg cag aaa ttg gac ctc cca gga aat tta cct ggc agc aaa Thr Pro Val Gln Lys Leu Asp Leu Pro Gly Asn Leu Pro Gly Ser Lys 2285 2290 2295 2300			7096
aga tgg cca caa act cct aag gaa aag gcc cag gct cta gaa gac ctg			7144

Arg Trp Pro Gln Thr Pro Lys Glu Lys Ala Gln Ala Leu Glu Asp Leu	
2305 2310 2315	
gct ggc ttc aaa gag ctc ttc cag aca cca ggc act gac aag ccc acg	7192
Ala Gly Phe Lys Glu Leu Phe Gln Thr Pro Gly Thr Asp Lys Pro Thr	
2320 2325 2330	
act gat gag aaa act acc aaa ata gcc tgc aaa tct cca caa cca gac	7240
Thr Asp Glu Lys Thr Thr Lys Ile Ala Cys Lys Ser Pro Gln Pro Asp	
2335 2340 2345	
cca gtg gac acc cca gca agc aca aag caa cgg ccc aag aga aac ctc	7288
Pro Val Asp Thr Pro Ala Ser Thr Lys Gln Arg Pro Lys Arg Asn Leu	
2350 2355 2360	
agg aaa gca gac gta gag gaa gaa ttt tta gca ctc agg aaa cga aca	7336
Arg Lys Ala Asp Val Glu Glu Glu Phe Leu Ala Leu Arg Lys Arg Thr	
2365 2370 2375 2380	
cca tca gca ggc aaa gcc atg gac acc cca aaa cca gca gta agt gat	7384
Pro Ser Ala Gly Lys Ala Met Asp Thr Pro Lys Pro Ala Val Ser Asp	
2385 2390 2395	
gag aaa aat atc aac aca ttt gtg gaa act cca gtg cag aaa ctg gac	7432
Glu Lys Asn Ile Asn Thr Phe Val Glu Thr Pro Val Gln Lys Leu Asp	
2400 2405 2410	
ctg cta gga aat tta cct ggc agc aag aga cag cca cag act cct aag	7480
Leu Leu Gly Asn Leu Pro Gly Ser Lys Arg Gln Pro Gln Thr Pro Lys	
2415 2420 2425	
gaa aag gct gag gct cta gag gac ctg gtt ggc ttc aaa gaa ctc ttc	7528
Glu Lys Ala Glu Ala Leu Glu Asp Leu Val Gly Phe Lys Glu Leu Phe	
2430 2435 2440	
cag aca cca ggt cac act gag gaa tca atg act gat gac aaa atc aca	7576
Gln Thr Pro Gly His Thr Glu Glu Ser Met Thr Asp Asp Lys Ile Thr	
2445 2450 2455 2460	
gaa gta tcc tgt aaa tct cca cag cca gag tca ttc aaa acc tca aga	7624
Glu Val Ser Cys Lys Ser Pro Gln Pro Glu Ser Phe Lys Thr Ser Arg	
2465 2470 2475	
agc tcc aag caa agg ctc aag ata ccc ctg gtg aaa gtg gac atg aaa	7672
Ser Ser Lys Gln Arg Leu Lys Ile Pro Leu Val Lys Val Asp Met Lys	
2480 2485 2490	
gaa gag ccc cta gca gtc agc aag ctc aca cgg aca tca ggg gag act	7720
Glu Glu Pro Leu Ala Val Ser Lys Leu Thr Arg Thr Ser Gly Glu Thr	
2495 2500 2505	

acg caa aca cac aca gag cca aca gga gat agt aag agc atc aaa gcg	7768
Thr Gln Thr His Thr Glu Pro Thr Gly Asp Ser Lys Ser Ile Lys Ala	
2510 2515 2520	
ttt aag gag tct cca aag cag atc ctg gac cca gca gca agt gta act	7816
Phe Lys Glu Ser Pro Lys Gln Ile Leu Asp Pro Ala Ala Ser Val Thr	
2525 2530 2535 2540	
ggg agc agg agg cag ctg aga act cgt aag gaa aag gcc cgt gct cta	7864
Gly Ser Arg Arg Gln Leu Arg Thr Arg Lys Glu Lys Ala Arg Ala Leu	
2545 2550 2555	
gaa gac ctg gtt gac ttc aaa gag ctc ttc tca gca cca ggt cac act	7912
Glu Asp Leu Val Asp Phe Lys Glu Leu Phe Ser Ala Pro Gly His Thr	
2560 2565 2570	
gaa gag tca atg act att gac aaa aac aca aaa att ccc tgc aaa tct	7960
Glu Glu Ser Met Thr Ile Asp Lys Asn Thr Lys Ile Pro Cys Lys Ser	
2575 2580 2585	
ccc cca cca gaa cta aca gac act gcc acg agc aca aag aga tgc ccc	8008
Pro Pro Pro Glu Leu Thr Asp Thr Ala Thr Ser Thr Lys Arg Cys Pro	
2590 2595 2600	
aag aca cgt ccc agg aaa gaa gta aaa gag gag ctc tca gca gtt gag	8056
Lys Thr Arg Pro Arg Lys Glu Val Lys Glu Glu Leu Ser Ala Val Glu	
2605 2610 2615 2620	
agg ctc acg caa aca tca ggg caa agc aca cac aca cac aaa gaa cca	8104
Arg Leu Thr Gln Thr Ser Gly Gln Ser Thr His Thr His Lys Glu Pro	
2625 2630 2635	
gca agc ggt gat gag ggc atc aaa gta ttg aag caa cgt gca aag aag	8152
Ala Ser Gly Asp Glu Gly Ile Lys Val Leu Lys Gln Arg Ala Lys Lys	
2640 2645 2650	
aaa cca aac cca gta gaa gag gaa ccc agc agg aga agg cca aga gca	8200
Lys Pro Asn Pro Val Glu Glu Glu Pro Ser Arg Arg Arg Pro Arg Ala	
2655 2660 2665	
cct aag gaa aag gcc caa ccc ctg gaa gac ctg gcc ggc ttc aca gag	8248
Pro Lys Glu Lys Ala Gln Pro Leu Glu Asp Leu Ala Gly Phe Thr Glu	
2670 2675 2680	
ctc tct gaa aca tca ggt cac act cag gaa tca ctg act gct ggc aaa	8296
Leu Ser Glu Thr Ser Gly His Thr Gln Glu Ser Leu Thr Ala Gly Lys	
2685 2690 2695 2700	
gcc act aaa ata ccc tgc gaa tct ccc cca cta gaa gtg gta gac acc	8344
Ala Thr Lys Ile Pro Cys Glu Ser Pro Pro Leu Glu Val Val Asp Thr	
2705 2710 2715	

aca gca agc aca aag agg cat ctc agg aca cgt gtg cag aag gta caa	8392
Thr Ala Ser Thr Lys Arg His Leu Arg Thr Arg Val Gln Lys Val Gln	
2720 2725 2730	
gta aaa gaa gag cct tca gca gtc aag ttc aca caa aca tca ggg gaa	8440
Val Lys Glu Glu Pro Ser Ala Val Lys Phe Thr Gln Thr Ser Gly Glu	
2735 2740 2745	
acc acg gat gca gac aaa gaa cca gca ggt gaa gat aaa ggc atc aaa	8488
Thr Thr Asp Ala Asp Lys Glu Pro Ala Gly Glu Asp Lys Gly Ile Lys	
2750 2755 2760	
gca ttg aag gaa tct gca aaa cag aca ccg gct cca gca gca agt gta	8536
Ala Leu Lys Glu Ser Ala Lys Gln Thr Pro Ala Pro Ala Ala Ser Val	
2765 2770 2775 2780	
act ggc agc agg aga cgg cca aga gca ccc agg gaa agt gcc caa gcc	8584
Thr Gly Ser Arg Arg Arg Pro Arg Ala Pro Arg Glu Ser Ala Gln Ala	
2785 2790 2795	
ata gaa gac cta gct ggc ttc aaa gac cca gca gca ggt cac act gaa	8632
Ile Glu Asp Leu Ala Gly Phe Lys Asp Pro Ala Ala Gly His Thr Glu	
2800 2805 2810	
gaa tca atg act gat gac aaa acc act aaa ata ccc tgc aaa tca tca	8680
Glu Ser Met Thr Asp Asp Lys Thr Thr Lys Ile Pro Cys Lys Ser Ser	
2815 2820 2825	
cca gaa cta gaa gac acc gca aca agc tca aag aga cgg ccc agg aca	8728
Pro Glu Leu Glu Asp Thr Ala Thr Ser Ser Lys Arg Arg Pro Arg Thr	
2830 2835 2840	
cgt gcc cag aaa gta gaa gtg aag gag gag ctg tta gca gtt ggc aag	8776
Arg Ala Gln Lys Val Glu Val Lys Glu Glu Leu Leu Ala Val Gly Lys	
2845 2850 2855 2860	
ctc aca caa acc tca ggg gag acc acg cac acc gac aaa gag ccg gta	8824
Leu Thr Gln Thr Ser Gly Glu Thr Thr His Thr Asp Lys Glu Pro Val	
2865 2870 2875	
ggg gag ggc aaa ggc acg aaa gca ttt aag caa cct gca aag cgg aac	8872
Gly Glu Gly Lys Gly Thr Lys Ala Phe Lys Gln Pro Ala Lys Arg Asn	
2880 2885 2890	
gtg gac gca gaa gat gta att ggc agc agg aga cag cca aga gca cct	8920
Val Asp Ala Glu Asp Val Ile Gly Ser Arg Arg Gln Pro Arg Ala Pro	
2895 2900 2905	
aag gaa aag gcc caa ccc ctg gaa gac ctg gcc agc ttc caa gag ctc	8968
Lys Glu Lys Ala Gln Pro Leu Glu Asp Leu Ala Ser Phe Gln Glu Leu	

2910	2915	2920	
tct caa aca cca ggc cac act gag gaa ctg gca aat ggt gct gct gat			9016
Ser Gln Thr Pro Gly His Thr Glu Glu Leu Ala Asn Gly Ala Ala Asp			
2925	2930	2935	2940
agc ttt aca agc gct cca aag caa aca cct gac agt gga aaa cct cta			9064
Ser Phe Thr Ser Ala Pro Lys Gln Thr Pro Asp Ser Gly Lys Pro Leu			
2945	2950		2955
aaa ata tcc aga aga gtt ctt cgg gcc cct aaa gta gaa ccc gtg gga			9112
Lys Ile Ser Arg Arg Val Leu Arg Ala Pro Lys Val Glu Pro Val Gly			
2960	2965		2970
gac gtg gta agc acc aga gac cct gta aaa tca caa agc aaa agc aac			9160
Asp Val Val Ser Thr Arg Asp Pro Val Lys Ser Gln Ser Lys Ser Asn			
2975	2980		2985
act tcc ctg ccc cca ctg ccc ttc aag agg gga ggt ggc aaa gat gga			9208
Thr Ser Leu Pro Pro Leu Pro Phe Lys Arg Gly Gly Gly Lys Asp Gly			
2990	2995		3000
agc gtc acg gga acc aag agg ctg cgc tgc atg cca gca cca gag gaa			9256
Ser Val Thr Gly Thr Lys Arg Leu Arg Cys Met Pro Ala Pro Glu Glu			
3005	3010		3015
att gtg gag gag ctg cca gcc agc aag aag cag agg gtt gct ccc agg			9304
Ile Val Glu Glu Leu Pro Ala Ser Lys Lys Gln Arg Val Ala Pro Arg			
3025	3030		3035
gca aga ggc aaa tca tcc gaa ccc gtg gtc atc atg aag aga agt ttg			9352
Ala Arg Gly Lys Ser Ser Glu Pro Val Val Ile Met Lys Arg Ser Leu			
3040	3045		3050
agg act tct gca aaa aga att gaa cct gcg gaa gag ctg aac agc aac			9400
Arg Thr Ser Ala Lys Arg Ile Glu Pro Ala Glu Glu Leu Asn Ser Asn			
3055	3060		3065
gac atg aaa acc aac aaa gag gaa cac aaa tta caa gac tcg gtc cct			9448
Asp Met Lys Thr Asn Lys Glu Glu His Lys Leu Gln Asp Ser Val Pro			
3070	3075		3080
gaa aat aag gga ata tcc ctg cgc tcc aga cgc caa gat aag act gag			9496
Glu Asn Lys Gly Ile Ser Leu Arg Ser Arg Arg Gln Asp Lys Thr Glu			
3085	3090		3095
gca gaa cag caa ata act gag gtc ttt gta tta gca gaa aga ata gaa			9544
Ala Glu Gln Gln Ile Thr Glu Val Phe Val Leu Ala Glu Arg Ile Glu			
3105	3110		3115
ata aac aga aat gaa aag aag ccc atg aag acc tcc cca gag atg gac			9592

Ile Asn Arg Asn Glu Lys Lys Pro Met Lys Thr Ser Pro Glu Met Asp
3120 3125 3130

att cag aat cca gat gat gga gcc cgg aaa ccc ata cct aga gac aaa 9640
Ile Gln Asn Pro Asp Asp Gly Ala Arg Lys Pro Ile Pro Arg Asp Lys
3135 3140 3145

gtc act gag aac aaa agg tgc ttg agg tct gct aga cag aat gag agc 9688
Val Thr Glu Asn Lys Arg Cys Leu Arg Ser Ala Arg Gln Asn Glu Ser
3150 3155 3160

tcc cag cct aag gtg gca gag gag agc gga ggg cag aag agt gcg aag 9736
Ser Gln Pro Lys Val Ala Glu Glu Ser Gly Gly Gln Lys Ser Ala Lys
3165 3170 3175 3180

gtt ctc atg cag aat cag aaa ggg aaa gga gaa gca gga aat tca gac 9784
Val Leu Met Gln Asn Gln Lys Gly Lys Gly Glu Ala Gly Asn Ser Asp
3185 3190 3195

tcc atg tgc ctg aga tca aga aag aca aaa agc cag cct gca gca agc 9832
Ser Met Cys Leu Arg Ser Arg Lys Thr Lys Ser Gln Pro Ala Ala Ser
3200 3205 3210

act ttg gag agc aaa tct gtg cag aga gta acg cgg agt gtc aag agg 9880
Thr Leu Glu Ser Lys Ser Val Gln Arg Val Thr Arg Ser Val Lys Arg
3215 3220 3225

tgt gca gaa aat cca aag aag gct gag gac aat gtg tgt gtc aag aaa 9928
Cys Ala Glu Asn Pro Lys Lys Ala Glu Asp Asn Val Cys Val Lys Lys
3230 3235 3240

ata aca acc aga agt cat agg gac agt gaa gat att tgacagaaaa 9974
Ile Thr Thr Arg Ser His Arg Asp Ser Glu Asp Ile
3245 3250 3255

atcgaactgg gaaaaatata ataaagttag ttttgtgata agttctagtg cagtttttgt 10034
cataaattac aagtgaattc tgtaagtaag gctgtcagtc tgcttaaggg aagaaaactt 10094
tggatttgct gggctctgaat cggcttcata aactccactg ggagcactgc tgggctcctg 10154
gactgagaat agttgaacac cgggggcctt gtgaaggagt ctgggccaag gtttgccctc 10214
agctttgcag aatgaagcct tgaggtctgt caccaccac agccacccta cagcagcctt 10274
aactgtgaca cttgccacac tgtgtcgtcg tttgtttgcc tatgttctcc agggcacggt 10334
ggcaggaaca actatcctcg tctgtcccaa cactgagcag gcactcggtta aacacgaatg 10394
aatggataag cgcacggatg aatggagctt acaagatctg tctttccaat ggccggggggc 10454

atttgggtccc caaathtaagg ctattggaca tctgcacagg acagtcctat ttttgatgtc 10514
ctttcctttc tgaaaataaaa gttttgtgct ttggagaatg actcgtgagc acatccttag 10574
ggaccaagag tgactttctg taaggagtga ctcgtggctt gccttggctt cttgggaata 10634
cttttctaac taggggttgc ctcacctgag acattctcca ccgcggaat ctcaggggtcc 10694
caggctgtgg gccatcacga cctcaaactg gctcctaata tccagctttc ctgtcattga 10754
aagcttcgga agtttactgg ctctgctccc gcctgttttc tttctgactc tatctggcag 10814
cccgatgccca ccagtagacg gaagtgcacac cagtactctg taaagcatca tcaccttgg 10874
agagactgag cactcagcac cttcagccac gatttcagga tcgcttcctt gtgagccgct 10934
gcctccgaaa tctcctttga agcccagaca tctttctcca gcttcagact ttagatatata 10994
actcgttcat cttcatttac tttccacttt gccccctgtc ctctctgtgt tccccaaatc 11054
agagaatagc ccgcatccc ccagatcac tgtctggatt cctccccatt caccacactt 11114
gccaggtgca ggtgaggatg gtgcaccaga cagggtagct gtcccccaa atgtgccctg 11174
tgccgggcagt gccctgtctc cacgtttgtt tccccagtgt ctggcgggga gccaggtgac 11234
atcataaata cttgctgaat gaatgcagaa atcagcggta ctgacttgta ctatattggc 11294
tgccatgata gggttctcac agcgtcatcc atgatcgtaa gggagaatga cattctgctt 11354
gagggagggga atagaaaggg gcagggaggg gacatctgag ggcttcacag ggctgcaaag 11414
ggtacagggga ttgcaccagg gcagaacagg ggaggggtgt caaggaagag tggctcttag 11474
cagaggcact ttggaagggtg tgaggcataa atgcttcctt ctacgtaggc caacctcaaa 11534
actttcagta ggaatgttgc tatgatcaag ttgttctaac actttagact tagtagtaat 11594
tatgaacctc acatagaaaa atttcatcca gccatatgcc tgtggagtgg aatattctgt 11654
ttagtagaaa aatccttttag agttcagctc taaccagaaa tcttgctgaa gtatgtcagc 11714
accttttctc acctgggtaa gtacagtatt tcaagagcac gctaaggggtg gttttcattt 11774
tacagggctg ttgatgatgg gttaaaaatg ttcatttaag ggctaccccc gtgtttaata 11834
gatgaacacc acttctacac aacctcctt ggtactgggg gagggagaga tctgacaaat 11894
actgcccatt cccctaggct gactggattt gagaacaaat acccaccat ttccaccatg 11954
gtatggtaac ttctctgagc ttcagtttcc aagtgaattt ccatgtaata ggacattccc 12014

attaaataca agctgttttt acttttttcgc ctcccagggc ctgtgcgac tggtccccc 12074
gcctctcttg ggctttctta cactaactct gtacctacca tctcctgcct cccttaggca 12134
ggcacctcca accaccacac actccctgct gttttccctg cctggaactt tcccaccagc 12194
cccaccaaga tcatttcac cagtcctgag ctcagcttaa gggaggcttc ttgcctgtgg 12254
gttcctcac ccccatgcct gtcctccagg ctggggcagg ttcttagttt gcctggaatt 12314
gttctgtacc tctttgtagc acgtagtgtt gtgaaactaa gccactaatt gagtttctgg 12374
ctcccctcct ggggttgtaa gttttgttca ttcattgagg cgcactgtat ttcttggtta 12434
ctgtatccca gtgaccagcc acaggagatg tccaataaag tatgtgatga aatggtctt 12493

<210> 2

<211> 3256

<212> PRT

<213> Homo sapiens

<400> 2

Met	Trp	Pro	Thr	Arg	Arg	Leu	Val	Thr	Ile	Lys	Arg	Ser	Gly	Val	Asp
1				5					10					15	
Gly	Pro	His	Phe	Pro	Leu	Ser	Leu	Ser	Thr	Cys	Leu	Phe	Gly	Arg	Gly
		20						25					30		
Ile	Glu	Cys	Asp	Ile	Arg	Ile	Gln	Leu	Pro	Val	Val	Ser	Lys	Gln	His
		35					40					45			
Cys	Lys	Val	Glu	Ile	His	Glu	Gln	Glu	Ala	Ile	Leu	His	Asn	Phe	Ser
	50					55					60				
Ser	Thr	Asn	Pro	Thr	Gln	Val	Asn	Gly	Ser	Val	Ile	Asp	Glu	Pro	Val
65					70					75				80	
Arg	Leu	Lys	His	Gly	Asp	Val	Ile	Thr	Ile	Ile	Asp	Arg	Ser	Phe	Arg
				85					90					95	
Tyr	Glu	Asn	Glu	Ser	Leu	Gln	Asn	Gly	Arg	Lys	Ser	Thr	Glu	Phe	Pro
		100						105					110		
Arg	Lys	Ile	Arg	Glu	Gln	Glu	Pro	Ala	Arg	Arg	Val	Ser	Arg	Ser	Ser
		115					120					125			
Phe	Ser	Ser	Asp	Pro	Asp	Glu	Lys	Ala	Gln	Asp	Ser	Lys	Ala	Tyr	Ser
130						135					140				

Lys	Ile	Thr	Glu	Gly	Lys	Val	Ser	Gly	Asn	Pro	Gln	Val	His	Ile	Lys	145	150	155	160
Asn	Val	Lys	Glu	Asp	Ser	Thr	Ala	Asp	Asp	Ser	Lys	Asp	Ser	Val	Ala	165	170	175	
Gln	Gly	Thr	Thr	Asn	Val	His	Ser	Ser	Glu	His	Ala	Gly	Arg	Asn	Gly	180	185	190	
Arg	Asn	Ala	Ala	Asp	Pro	Ile	Ser	Gly	Asp	Phe	Lys	Glu	Ile	Ser	Ser	195	200	205	
Val	Lys	Leu	Val	Ser	Arg	Tyr	Gly	Glu	Leu	Lys	Ser	Val	Pro	Thr	Thr	210	215	220	
Gln	Cys	Leu	Asp	Asn	Ser	Lys	Lys	Asn	Glu	Ser	Pro	Phe	Trp	Lys	Leu	225	230	235	240
Tyr	Glu	Ser	Val	Lys	Lys	Glu	Leu	Asp	Val	Lys	Ser	Gln	Lys	Glu	Asn	245	250	255	
Val	Leu	Gln	Tyr	Cys	Arg	Lys	Ser	Gly	Leu	Gln	Thr	Asp	Tyr	Ala	Thr	260	265	270	
Glu	Lys	Glu	Ser	Ala	Asp	Gly	Leu	Gln	Gly	Glu	Thr	Gln	Leu	Leu	Val	275	280	285	
Ser	Arg	Lys	Ser	Arg	Pro	Lys	Ser	Gly	Gly	Ser	Gly	His	Ala	Val	Ala	290	295	300	
Glu	Pro	Ala	Ser	Pro	Glu	Gln	Glu	Leu	Asp	Gln	Asn	Lys	Gly	Lys	Gly	305	310	315	320
Arg	Asp	Val	Glu	Ser	Val	Gln	Thr	Pro	Ser	Lys	Ala	Val	Gly	Ala	Ser	325	330	335	
Phe	Pro	Leu	Tyr	Glu	Pro	Ala	Lys	Met	Lys	Thr	Pro	Val	Gln	Tyr	Ser	340	345	350	
Gln	Gln	Gln	Asn	Ser	Pro	Gln	Lys	His	Lys	Asn	Lys	Asp	Leu	Tyr	Thr	355	360	365	
Thr	Gly	Arg	Arg	Glu	Ser	Val	Asn	Leu	Gly	Lys	Ser	Glu	Gly	Phe	Lys	370	375	380	
Ala	Gly	Asp	Lys	Thr	Leu	Thr	Pro	Arg	Lys	Leu	Ser	Thr	Arg	Asn	Arg	385	390	395	400
Thr	Pro	Ala	Lys	Val	Glu	Asp	Ala	Ala	Asp	Ser	Ala	Thr	Lys	Pro	Glu	405	410	415	

Asn	Leu	Ser	Ser	Lys	Thr	Arg	Gly	Ser	Ile	Pro	Thr	Asp	Val	Glu	Val
			420					425					430		
Leu	Pro	Thr	Glu	Thr	Glu	Ile	His	Asn	Glu	Pro	Phe	Leu	Thr	Leu	Trp
		435					440					445			
Leu	Thr	Gln	Val	Glu	Arg	Lys	Ile	Gln	Lys	Asp	Ser	Leu	Ser	Lys	Pro
	450					455					460				
Glu	Lys	Leu	Gly	Thr	Thr	Ala	Gly	Gln	Met	Cys	Ser	Gly	Leu	Pro	Gly
465					470					475					480
Leu	Ser	Ser	Val	Asp	Ile	Asn	Asn	Phe	Gly	Asp	Ser	Ile	Asn	Glu	Ser
				485					490					495	
Glu	Gly	Ile	Pro	Leu	Lys	Arg	Arg	Arg	Val	Ser	Phe	Gly	Gly	His	Leu
			500					505					510		
Arg	Pro	Glu	Leu	Phe	Asp	Glu	Asn	Leu	Pro	Pro	Asn	Thr	Pro	Leu	Lys
		515					520					525			
Arg	Gly	Glu	Ala	Pro	Thr	Lys	Arg	Lys	Ser	Leu	Val	Met	His	Thr	Pro
	530					535					540				
Pro	Val	Leu	Lys	Lys	Ile	Ile	Lys	Glu	Gln	Pro	Gln	Pro	Ser	Gly	Lys
545					550					555					560
Gln	Glu	Ser	Gly	Ser	Glu	Ile	His	Val	Glu	Val	Lys	Ala	Gln	Ser	Leu
				565					570					575	
Val	Ile	Ser	Pro	Pro	Ala	Pro	Ser	Pro	Arg	Lys	Thr	Pro	Val	Ala	Ser
			580					585					590		
Asp	Gln	Arg	Arg	Arg	Ser	Cys	Lys	Thr	Ala	Pro	Ala	Ser	Ser	Ser	Lys
		595					600					605			
Ser	Gln	Thr	Glu	Val	Pro	Lys	Arg	Gly	Gly	Glu	Arg	Val	Ala	Thr	Cys
	610					615					620				
Leu	Gln	Lys	Arg	Val	Ser	Ile	Ser	Arg	Ser	Gln	His	Asp	Ile	Leu	Gln
625					630					635					640
Met	Ile	Cys	Ser	Lys	Arg	Arg	Ser	Gly	Ala	Ser	Glu	Ala	Asn	Leu	Ile
				645					650					655	
Val	Ala	Lys	Ser	Trp	Ala	Asp	Val	Val	Lys	Leu	Gly	Ala	Lys	Gln	Thr
			660					665					670		
Gln	Thr	Lys	Val	Ile	Lys	His	Gly	Pro	Gln	Arg	Ser	Met	Asn	Lys	Arg
		675					680					685			

Gln	Arg	Arg	Pro	Ala	Thr	Pro	Lys	Lys	Pro	Val	Gly	Glu	Val	His	Ser	
690						695					700					
Gln	Phe	Ser	Thr	Gly	His	Ala	Asn	Ser	Pro	Cys	Thr	Ile	Ile	Ile	Gly	
705					710					715					720	
Lys	Ala	His	Thr	Glu	Lys	Val	His	Val	Pro	Ala	Arg	Pro	Tyr	Arg	Val	
				725					730					735		
Leu	Asn	Asn	Phe	Ile	Ser	Asn	Gln	Lys	Met	Asp	Phe	Lys	Glu	Asp	Leu	
			740					745					750			
Ser	Gly	Ile	Ala	Glu	Met	Phe	Lys	Thr	Pro	Val	Lys	Glu	Gln	Pro	Gln	
		755					760					765				
Leu	Thr	Ser	Thr	Cys	His	Ile	Ala	Ile	Ser	Asn	Ser	Glu	Asn	Leu	Leu	
	770					775					780					
Gly	Lys	Gln	Phe	Gln	Gly	Thr	Asp	Ser	Gly	Glu	Glu	Pro	Leu	Leu	Pro	
785					790					795					800	
Thr	Ser	Glu	Ser	Phe	Gly	Gly	Asn	Val	Phe	Phe	Ser	Ala	Gln	Asn	Ala	
				805					810					815		
Ala	Lys	Gln	Pro	Ser	Asp	Lys	Cys	Ser	Ala	Ser	Pro	Pro	Leu	Arg	Arg	
			820					825					830			
Gln	Cys	Ile	Arg	Glu	Asn	Gly	Asn	Val	Ala	Lys	Thr	Pro	Arg	Asn	Thr	
		835					840					845				
Tyr	Lys	Met	Thr	Ser	Leu	Glu	Thr	Lys	Thr	Ser	Asp	Thr	Glu	Thr	Glu	
	850					855					860					
Pro	Ser	Lys	Thr	Val	Ser	Thr	Val	Asn	Arg	Ser	Gly	Arg	Ser	Thr	Glu	
865					870					875					880	
Phe	Arg	Asn	Ile	Gln	Lys	Leu	Pro	Val	Glu	Ser	Lys	Ser	Glu	Glu	Thr	
				885					890					895		
Asn	Thr	Glu	Ile	Val	Glu	Cys	Ile	Leu	Lys	Arg	Gly	Gln	Lys	Ala	Thr	
			900					905					910			
Leu	Leu	Gln	Gln	Arg	Arg	Glu	Gly	Glu	Met	Lys	Glu	Ile	Glu	Arg	Pro	
		915					920					925				
Phe	Glu	Thr	Tyr	Lys	Glu	Asn	Ile	Glu	Leu	Lys	Glu	Asn	Asp	Glu	Lys	
	930					935					940					
Met	Lys	Ala	Met	Lys	Arg	Ser	Arg	Thr	Trp	Gly	Gln	Lys	Cys	Ala	Pro	
945					950					955					960	

Met	Ser	Asp	Leu	Thr	Asp	Leu	Lys	Ser	Leu	Pro	Asp	Thr	Glu	Leu	Met	965	970	975
Lys	Asp	Thr	Ala	Arg	Gly	Gln	Asn	Leu	Leu	Gln	Thr	Gln	Asp	His	Ala	980	985	990
Lys	Ala	Pro	Lys	Ser	Glu	Lys	Gly	Lys	Ile	Thr	Lys	Met	Pro	Cys	Gln	995	1000	1005
Ser	Leu	Gln	Pro	Glu	Pro	Ile	Asn	Thr	Pro	Thr	His	Thr	Lys	Gln	Gln	1010	1015	1020
Leu	Lys	Ala	Ser	Leu	Gly	Lys	Val	Gly	Val	Lys	Glu	Glu	Leu	Leu	Ala	1025	1030	1035
Val	Gly	Lys	Phe	Thr	Arg	Thr	Ser	Gly	Glu	Thr	Thr	His	Thr	His	Arg	1045	1050	1055
Glu	Pro	Ala	Gly	Asp	Gly	Lys	Ser	Ile	Arg	Thr	Phe	Lys	Glu	Ser	Pro	1060	1065	1070
Lys	Gln	Ile	Leu	Asp	Pro	Ala	Ala	Arg	Val	Thr	Gly	Met	Lys	Lys	Trp	1075	1080	1085
Pro	Arg	Thr	Pro	Lys	Glu	Glu	Ala	Gln	Ser	Leu	Glu	Asp	Leu	Ala	Gly	1090	1095	1100
Phe	Lys	Glu	Leu	Phe	Gln	Thr	Pro	Gly	Pro	Ser	Glu	Glu	Ser	Met	Thr	1105	1110	1115
Asp	Glu	Lys	Thr	Thr	Lys	Ile	Ala	Cys	Lys	Ser	Pro	Pro	Pro	Glu	Ser	1125	1130	1135
Val	Asp	Thr	Pro	Thr	Ser	Thr	Lys	Gln	Trp	Pro	Lys	Arg	Ser	Leu	Arg	1140	1145	1150
Lys	Ala	Asp	Val	Glu	Glu	Glu	Phe	Leu	Ala	Leu	Arg	Lys	Leu	Thr	Pro	1155	1160	1165
Ser	Ala	Gly	Lys	Ala	Met	Leu	Thr	Pro	Lys	Pro	Ala	Gly	Gly	Asp	Glu	1170	1175	1180
Lys	Asp	Ile	Lys	Ala	Phe	Met	Gly	Thr	Pro	Val	Gln	Lys	Leu	Asp	Leu	1185	1190	1195
Ala	Gly	Thr	Leu	Pro	Gly	Ser	Lys	Arg	Gln	Leu	Gln	Thr	Pro	Lys	Glu	1205	1210	1215
Lys	Ala	Gln	Ala	Leu	Glu	Asp	Leu	Ala	Gly	Phe	Lys	Glu	Leu	Phe	Gln	1220	1225	1230

Thr Pro Gly His Thr Glu Glu Leu Val Ala Ala Gly Lys Thr Thr Lys
1235 1240 1245

Ile Pro Cys Asp Ser Pro Gln Ser Asp Pro Val Asp Thr Pro Thr Ser
1250 1255 1260

Thr Lys Gln Arg Pro Lys Arg Ser Ile Arg Lys Ala Asp Val Glu Gly
1265 1270 1275 1280

Glu Leu Leu Ala Cys Arg Asn Leu Met Pro Ser Ala Gly Lys Ala Met
1285 1290 1295

His Thr Pro Lys Pro Ser Val Gly Glu Glu Lys Asp Ile Ile Ile Phe
1300 1305 1310

Val Gly Thr Pro Val Gln Lys Leu Asp Leu Thr Glu Asn Leu Thr Gly
1315 1320 1325

Ser Lys Arg Arg Pro Gln Thr Pro Lys Glu Glu Ala Gln Ala Leu Glu
1330 1335 1340

Asp Leu Thr Gly Phe Lys Glu Leu Phe Gln Thr Pro Gly His Thr Glu
1345 1350 1355 1360

Glu Ala Val Ala Ala Gly Lys Thr Thr Lys Met Pro Cys Glu Ser Ser
1365 1370 1375

Pro Pro Glu Ser Ala Asp Thr Pro Thr Ser Thr Arg Arg Gln Pro Lys
1380 1385 1390

Thr Pro Leu Glu Lys Arg Asp Val Gln Lys Glu Leu Ser Ala Leu Lys
1395 1400 1405

Lys Leu Thr Gln Thr Ser Gly Glu Thr Thr His Thr Asp Lys Val Pro
1410 1415 1420

Gly Gly Glu Asp Lys Ser Ile Asn Ala Phe Arg Glu Thr Ala Lys Gln
1425 1430 1435 1440

Lys Leu Asp Pro Ala Ala Ser Val Thr Gly Ser Lys Arg His Pro Lys
1445 1450 1455

Thr Lys Glu Lys Ala Gln Pro Leu Glu Asp Leu Ala Gly Trp Lys Glu
1460 1465 1470

Leu Phe Gln Thr Pro Val Cys Thr Asp Lys Pro Thr Thr His Glu Lys
1475 1480 1485

Thr Thr Lys Ile Ala Cys Arg Ser Gln Pro Asp Pro Val Asp Thr Pro
1490 1495 1500

Thr Ser Ser Lys Pro Gln Ser Lys Arg Ser Leu Arg Lys Val Asp Val
1505 1510 1515 1520

Glu Glu Glu Phe Phe Ala Leu Arg Lys Arg Thr Pro Ser Ala Gly Lys
1525 1530 1535

Ala Met His Thr Pro Lys Pro Ala Val Ser Gly Glu Lys Asn Ile Tyr
1540 1545 1550

Ala Phe Met Gly Thr Pro Val Gln Lys Leu Asp Leu Thr Glu Asn Leu
1555 1560 1565

Thr Gly Ser Lys Arg Arg Leu Gln Thr Pro Lys Glu Lys Ala Gln Ala
1570 1575 1580

Leu Glu Asp Leu Ala Gly Phe Lys Glu Leu Phe Gln Thr Arg Gly His
1585 1590 1595 1600

Thr Glu Glu Ser Met Thr Asn Asp Lys Thr Ala Lys Val Ala Cys Lys
1605 1610 1615

Ser Ser Gln Pro Asp Leu Asp Lys Asn Pro Ala Ser Ser Lys Arg Arg
1620 1625 1630

Leu Lys Thr Ser Leu Gly Lys Val Gly Val Lys Glu Glu Leu Leu Ala
1635 1640 1645

Val Gly Lys Leu Thr Gln Thr Ser Gly Glu Thr Thr His Thr His Thr
1650 1655 1660

Glu Pro Thr Gly Asp Gly Lys Ser Met Lys Ala Phe Met Glu Ser Pro
1665 1670 1675 1680

Lys Gln Ile Leu Asp Ser Ala Ala Ser Leu Thr Gly Ser Lys Arg Gln
1685 1690 1695

Leu Arg Thr Pro Lys Gly Lys Ser Glu Val Pro Glu Asp Leu Ala Gly
1700 1705 1710

Phe Ile Glu Leu Phe Gln Thr Pro Ser His Thr Lys Glu Ser Met Thr
1715 1720 1725

Asn Glu Lys Thr Thr Lys Val Ser Tyr Arg Ala Ser Gln Pro Asp Leu
1730 1735 1740

Val Asp Thr Pro Thr Ser Ser Lys Pro Gln Pro Lys Arg Ser Leu Arg
1745 1750 1755 1760

Lys Ala Asp Thr Glu Glu Glu Phe Leu Ala Phe Arg Lys Gln Thr Pro
1765 1770 1775

Ser Ala Gly Lys Ala Met His Thr Pro Lys Pro Ala Val Gly Glu Glu
1780 1785 1790

Lys Asp Ile Asn Thr Phe Leu Gly Thr Pro Val Gln Lys Leu Asp Gln
1795 1800 1805

Pro Gly Asn Leu Pro Gly Ser Asn Arg Arg Leu Gln Thr Arg Lys Glu
1810 1815 1820

Lys Ala Gln Ala Leu Glu Glu Leu Thr Gly Phe Arg Glu Leu Phe Gln
1825 1830 1835 1840

Thr Pro Cys Thr Asp Asn Pro Thr Ala Asp Glu Lys Thr Thr Lys Lys
1845 1850 1855

Ile Leu Cys Lys Ser Pro Gln Ser Asp Pro Ala Asp Thr Pro Thr Asn
1860 1865 1870

Thr Lys Gln Arg Pro Lys Arg Ser Leu Lys Lys Ala Asp Val Glu Glu
1875 1880 1885

Glu Phe Leu Ala Phe Arg Lys Leu Thr Pro Ser Ala Gly Lys Ala Met
1890 1895 1900

His Thr Pro Lys Ala Ala Val Gly Glu Glu Lys Asp Ile Asn Thr Phe
1905 1910 1915 1920

Val Gly Thr Pro Val Glu Lys Leu Asp Leu Leu Gly Asn Leu Pro Gly
1925 1930 1935

Ser Lys Arg Arg Pro Gln Thr Pro Lys Glu Lys Ala Lys Ala Leu Glu
1940 1945 1950

Asp Leu Ala Gly Phe Lys Glu Leu Phe Gln Thr Pro Gly His Thr Glu
1955 1960 1965

Glu Ser Met Thr Asp Asp Lys Ile Thr Glu Val Ser Cys Lys Ser Pro
1970 1975 1980

Gln Pro Asp Pro Val Lys Thr Pro Thr Ser Ser Lys Gln Arg Leu Lys
1985 1990 1995 2000

Ile Ser Leu Gly Lys Val Gly Val Lys Glu Glu Val Leu Pro Val Gly
2005 2010 2015

Lys Leu Thr Gln Thr Ser Gly Lys Thr Thr Gln Thr His Arg Glu Thr
2020 2025 2030

Ala Gly Asp Gly Lys Ser Ile Lys Ala Phe Lys Glu Ser Ala Lys Gln
2035 2040 2045

Met Leu Asp Pro Ala Asn Tyr Gly Thr Gly Met Glu Arg Trp Pro Arg
2050 2055 2060

Thr Pro Lys Glu Glu Ala Gln Ser Leu Glu Asp Leu Ala Gly Phe Lys
2065 2070 2075 2080

Glu Leu Phe Gln Thr Pro Asp His Thr Glu Glu Ser Thr Thr Asp Asp
2085 2090 2095

Lys Thr Thr Lys Ile Ala Cys Lys Ser Pro Pro Pro Glu Ser Met Asp
2100 2105 2110

Thr Pro Thr Ser Thr Arg Arg Arg Pro Lys Thr Pro Leu Gly Lys Arg
2115 2120 2125

Asp Ile Val Glu Glu Leu Ser Ala Leu Lys Gln Leu Thr Gln Thr Thr
2130 2135 2140

His Thr Asp Lys Val Pro Gly Asp Glu Asp Lys Gly Ile Asn Val Phe
2145 2150 2155 2160

Arg Glu Thr Ala Lys Gln Lys Leu Asp Pro Ala Ala Ser Val Thr Gly
2165 2170 2175

Ser Lys Arg Gln Pro Arg Thr Pro Lys Gly Lys Ala Gln Pro Leu Glu
2180 2185 2190

Asp Leu Ala Gly Leu Lys Glu Leu Phe Gln Thr Pro Val Cys Thr Asp
2195 2200 2205

Lys Pro Thr Thr His Glu Lys Thr Thr Lys Ile Ala Cys Arg Ser Pro
2210 2215 2220

Gln Pro Asp Pro Val Gly Thr Pro Thr Ile Phe Lys Pro Gln Ser Lys
2225 2230 2235 2240

Arg Ser Leu Arg Lys Ala Asp Val Glu Glu Glu Ser Leu Ala Leu Arg
2245 2250 2255

Lys Arg Thr Pro Ser Val Gly Lys Ala Met Asp Thr Pro Lys Pro Ala
2260 2265 2270

Gly Gly Asp Glu Lys Asp Met Lys Ala Phe Met Gly Thr Pro Val Gln
2275 2280 2285

Lys Leu Asp Leu Pro Gly Asn Leu Pro Gly Ser Lys Arg Trp Pro Gln
2290 2295 2300

Thr Pro Lys Glu Lys Ala Gln Ala Leu Glu Asp Leu Ala Gly Phe Lys
2305 2310 2315 2320

Glu Leu Phe Gln Thr Pro Gly Thr Asp Lys Pro Thr Thr Asp Glu Lys	2325	2330	2335
Thr Thr Lys Ile Ala Cys Lys Ser Pro Gln Pro Asp Pro Val Asp Thr	2340	2345	2350
Pro Ala Ser Thr Lys Gln Arg Pro Lys Arg Asn Leu Arg Lys Ala Asp	2355	2360	2365
Val Glu Glu Glu Phe Leu Ala Leu Arg Lys Arg Thr Pro Ser Ala Gly	2370	2375	2380
Lys Ala Met Asp Thr Pro Lys Pro Ala Val Ser Asp Glu Lys Asn Ile	2385	2390	2395
Asn Thr Phe Val Glu Thr Pro Val Gln Lys Leu Asp Leu Leu Gly Asn	2405	2410	2415
Leu Pro Gly Ser Lys Arg Gln Pro Gln Thr Pro Lys Glu Lys Ala Glu	2420	2425	2430
Ala Leu Glu Asp Leu Val Gly Phe Lys Glu Leu Phe Gln Thr Pro Gly	2435	2440	2445
His Thr Glu Glu Ser Met Thr Asp Asp Lys Ile Thr Glu Val Ser Cys	2450	2455	2460
Lys Ser Pro Gln Pro Glu Ser Phe Lys Thr Ser Arg Ser Ser Lys Gln	2465	2470	2475
Arg Leu Lys Ile Pro Leu Val Lys Val Asp Met Lys Glu Glu Pro Leu	2485	2490	2495
Ala Val Ser Lys Leu Thr Arg Thr Ser Gly Glu Thr Thr Gln Thr His	2500	2505	2510
Thr Glu Pro Thr Gly Asp Ser Lys Ser Ile Lys Ala Phe Lys Glu Ser	2515	2520	2525
Pro Lys Gln Ile Leu Asp Pro Ala Ala Ser Val Thr Gly Ser Arg Arg	2530	2535	2540
Gln Leu Arg Thr Arg Lys Glu Lys Ala Arg Ala Leu Glu Asp Leu Val	2545	2550	2555
Asp Phe Lys Glu Leu Phe Ser Ala Pro Gly His Thr Glu Glu Ser Met	2565	2570	2575
Thr Ile Asp Lys Asn Thr Lys Ile Pro Cys Lys Ser Pro Pro Pro Glu	2580	2585	2590

Leu Thr Asp Thr Ala Thr Ser Thr Lys Arg Cys Pro Lys Thr Arg Pro		
2595	2600	2605
Arg Lys Glu Val Lys Glu Glu Leu Ser Ala Val Glu Arg Leu Thr Gln		
2610	2615	2620
Thr Ser Gly Gln Ser Thr His Thr His Lys Glu Pro Ala Ser Gly Asp		
2625	2630	2635 2640
Glu Gly Ile Lys Val Leu Lys Gln Arg Ala Lys Lys Lys Pro Asn Pro		
2645	2650	2655
Val Glu Glu Glu Pro Ser Arg Arg Arg Pro Arg Ala Pro Lys Glu Lys		
2660	2665	2670
Ala Gln Pro Leu Glu Asp Leu Ala Gly Phe Thr Glu Leu Ser Glu Thr		
2675	2680	2685
Ser Gly His Thr Gln Glu Ser Leu Thr Ala Gly Lys Ala Thr Lys Ile		
2690	2695	2700
Pro Cys Glu Ser Pro Pro Leu Glu Val Val Asp Thr Thr Ala Ser Thr		
2705	2710	2715 2720
Lys Arg His Leu Arg Thr Arg Val Gln Lys Val Gln Val Lys Glu Glu		
2725	2730	2735
Pro Ser Ala Val Lys Phe Thr Gln Thr Ser Gly Glu Thr Thr Asp Ala		
2740	2745	2750
Asp Lys Glu Pro Ala Gly Glu Asp Lys Gly Ile Lys Ala Leu Lys Glu		
2755	2760	2765
Ser Ala Lys Gln Thr Pro Ala Pro Ala Ala Ser Val Thr Gly Ser Arg		
2770	2775	2780
Arg Arg Pro Arg Ala Pro Arg Glu Ser Ala Gln Ala Ile Glu Asp Leu		
2785	2790	2795 2800
Ala Gly Phe Lys Asp Pro Ala Ala Gly His Thr Glu Glu Ser Met Thr		
2805	2810	2815
Asp Asp Lys Thr Thr Lys Ile Pro Cys Lys Ser Ser Pro Glu Leu Glu		
2820	2825	2830
Asp Thr Ala Thr Ser Ser Lys Arg Arg Pro Arg Thr Arg Ala Gln Lys		
2835	2840	2845
Val Glu Val Lys Glu Glu Leu Leu Ala Val Gly Lys Leu Thr Gln Thr		
2850	2855	2860

Ser Gly Glu Thr Thr His Thr Asp Lys Glu Pro Val Gly Glu Gly Lys			
2865	2870	2875	2880
Gly Thr Lys Ala Phe Lys Gln Pro Ala Lys Arg Asn Val Asp Ala Glu			
	2885	2890	2895
Asp Val Ile Gly Ser Arg Arg Gln Pro Arg Ala Pro Lys Glu Lys Ala			
	2900	2905	2910
Gln Pro Leu Glu Asp Leu Ala Ser Phe Gln Glu Leu Ser Gln Thr Pro			
	2915	2920	2925
Gly His Thr Glu Glu Leu Ala Asn Gly Ala Ala Asp Ser Phe Thr Ser			
	2930	2935	2940
Ala Pro Lys Gln Thr Pro Asp Ser Gly Lys Pro Leu Lys Ile Ser Arg			
	2945	2950	2955
Arg Val Leu Arg Ala Pro Lys Val Glu Pro Val Gly Asp Val Val Ser			
	2965	2970	2975
Thr Arg Asp Pro Val Lys Ser Gln Ser Lys Ser Asn Thr Ser Leu Pro			
	2980	2985	2990
Pro Leu Pro Phe Lys Arg Gly Gly Gly Lys Asp Gly Ser Val Thr Gly			
	2995	3000	3005
Thr Lys Arg Leu Arg Cys Met Pro Ala Pro Glu Glu Ile Val Glu Glu			
	3010	3015	3020
Leu Pro Ala Ser Lys Lys Gln Arg Val Ala Pro Arg Ala Arg Gly Lys			
	3025	3030	3035
Ser Ser Glu Pro Val Val Ile Met Lys Arg Ser Leu Arg Thr Ser Ala			
	3045	3050	3055
Lys Arg Ile Glu Pro Ala Glu Glu Leu Asn Ser Asn Asp Met Lys Thr			
	3060	3065	3070
Asn Lys Glu Glu His Lys Leu Gln Asp Ser Val Pro Glu Asn Lys Gly			
	3075	3080	3085
Ile Ser Leu Arg Ser Arg Arg Gln Asp Lys Thr Glu Ala Glu Gln Gln			
	3090	3095	3100
Ile Thr Glu Val Phe Val Leu Ala Glu Arg Ile Glu Ile Asn Arg Asn			
	3105	3110	3115
Glu Lys Lys Pro Met Lys Thr Ser Pro Glu Met Asp Ile Gln Asn Pro			
	3125	3130	3135

Asp Asp Gly Ala Arg Lys Pro Ile Pro Arg Asp Lys Val Thr Glu Asn
3140 3145 3150

Lys Arg Cys Leu Arg Ser Ala Arg Gln Asn Glu Ser Ser Gln Pro Lys
3155 3160 3165

Val Ala Glu Glu Ser Gly Gly Gln Lys Ser Ala Lys Val Leu Met Gln
3170 3175 3180

Asn Gln Lys Gly Lys Gly Glu Ala Gly Asn Ser Asp Ser Met Cys Leu
3185 3190 3195 3200

Arg Ser Arg Lys Thr Lys Ser Gln Pro Ala Ala Ser Thr Leu Glu Ser
3205 3210 3215

Lys Ser Val Gln Arg Val Thr Arg Ser Val Lys Arg Cys Ala Glu Asn
3220 3225 3230

Pro Lys Lys Ala Glu Asp Asn Val Cys Val Lys Lys Ile Thr Thr Arg
3235 3240 3245

Ser His Arg Asp Ser Glu Asp Ile
3250 3255

<210> 3
<211> 23
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence: start-2-anti
Synthetic oligonucleotide

<400> 3
accaggcgtc tcgtgggcca cat

23

<210> 4
<211> 23
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence: start-2-sense
Synthetic oligonucleotide

<400> 4
atgtggccca cgagacgcct ggt

23

<210> 5
<211> 25
<212> DNA
<213> Artificial sequence

<220>

<223> Description of the artificial sequence: missense
Synthetic oligonucleotide

<400> 5
agtactcagt aacgcctacg gtaag

25